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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln of:	BROEMMELSIEK	Attorney Docket: C4-971C
Title:	METHOD AND APPARATUS FOR OBJECT TRACKING AND DETECTION	
Serial No.:	09/801,484	Art Unit: 2613
Filed:	March 7, 2001	Examiner: Parsons, Charles E

Mail Stop: Non-Fee Amendment
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

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Sir:

DECLARATION OF RAYMOND BROEMMELSIEK

I, Raymond Broemmelsiek, hereby declare the following.

1. I reside in San Diego, California, and am the inventor of the subject matter claimed in the above-identified U.S. Patent Application.

2. I conceived, and actually reduced to practice, the subject matter claimed in the above-identified patent application at least as early as August 7, 1998.

3. Enclosed herewith is a copy of "CONTRACT ENGINEERING AGREEMENT" and "STATEMENT OF WORK FOR THE PHASE 1 AUTONOMOUS TRACKER / CONTROLLER PROJECT", both dated August 7, 1998, and "Tracker Development Task Estimates", which was prepared by me on or about August 7, 1998. These documents set forth the claimed invention.

4. Also enclosed herewith is a copy of "CONTRACT ENGINEERING AGREEMENT" and "STATEMENT OF WORK FOR THE PHASE 2 AUTONOMOUS TRACKER / CONTROLLER PROJECT", both dated December 3, 1998. These documents set forth the claimed invention.

5. Also enclosed herewith is a copy of the first two pages of draft Technology License Agreement from August 1999 for the technology embodied in the claimed invention. As set forth therein, the subject matter of the claimed invention had been reduced to practice prior to that time.

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6. The above-identified documents illustrate my conception and diligence in reducing to practice of each and every aspect of the invention set forth in the solicited claims from at least as early as August 7, 1998.

7. The undersigned declares that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and thus such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

March 9th, 2004
Date

Raymond Broemmelsiek

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Tracker Development Task Estimates

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Phase I:

Scope

Spin Logic's tracking technology today consists of a platform designed primarily for weapons fire control systems. This technology differs from the goals of the Phase I program in two fundamental ways. First, target acquisition and tracking is automated rather than manual. It is based on the camera's field of interest which is a programmable weighting function. Second, unlike the dome camera, the fire control camera has a fixed focal length and the camera's field of view is not under tracker control.

To incorporate the dome camera into a new type of surveillance system, the tracker and dome camera dynamics must be integrated. In addition, the tracker must provide for manual intervention of target selection and tracking. Doing so requires an intuitive user interface to complete the surveillance system demonstration.

Development Environment

The phase I development platform will be based on a standard PC and an Ariel Griffith board for the video processor board. Because this combination provides library and standard driver support as well as time saving application development tools, interfacing the various devices and developing a working system will be more expedient. Once this environment is operational, the rehosting work to the standalone platform will be more effectively executed.

Hardware Development Platform: PC, Video Processor Board, C80 Emulator, RS-422 I/F Card, SpeedDome/UltraDome camera, TV monitor or second VGA monitor, touch screen panel.

Software Tools: C80 code development tools (Master Processor and Parallel processor compiler, assembler, linker, loader, debugger, multi-processor simulator) NT development tools (Visual C++).

Test Equipment: Monitor, camera, logic analyzer, digital storage scope.

There are fundamentally two host software environments (Pentium/NT and the TMS320C80/RTMultitasker) on which the demonstration will be developed. Early in the course of this development, real-time inter-processor communication will be established. As basic tracking and control operations are established, certain of these communication and control tasks will be allocated to the PC environment when gains can be realized.

Test Environment

For testing, in the case of the tracker development for weapons systems, standard test data sets were derived from real-world scenarios and video taped. This approach proved effective for optimizing algorithms. For the surveillance system, by introducing a dynamic element into the tracking system (dome camera), a repeatable lab-ready data set becomes more problematic. Movement of the dome camera which is actuated by the tracker changes the video signal that is fed into the tracker. Initial lab testing will be performed by using pendulums to demonstrate target acquisition and camera tracking. The range of the period of the pendulums will serve to bound the data set. Field tests (TBD) will be carried out upon completion of the lab tests.

There are two sets of elements requiring run-time access to optimize for the test set. The first set of elements are the video tracking filter parameters. These must be accessible during run-time in order to effectively tune the system. The second set of elements are the identified targets and their tracks. These will be used for tuning the dome's dynamics and look-and-feel manual target selection.

Filter parameters will be accessible via a Windows-based GUI. They will also be passed between the Video Processor Board and the NT host application for dynamic control via real-time inter-processor communications. Target identification and tracks will be provided initially as graphic overlays to processed video output so that the look-and-feel may be refined between the touch-screen and the video tracker's perceived identified target. Once accomplished, direct video out from the dome camera will be used for the touch screen display.

Task	Additional Description
SYSTEM TASKS	**3 man months**
Development system and environments.	Hardware and software components ordered, integrated, and tested.
Windows NT dome driver	Low level driver from Video Processor direct to dome camera control interface.
Inter-processor communications protocol	Real-time messaging protocol in PCI-based Windows NT system between Video Processor and NT application.
Tracker GUI	Application level GUI for tracker filter parameters display and control, target statistics display.
Touch screen Communication	Device coordinate transformation Pick routine (filtering and target correlation) Direct Video Processor communication
Target Communication, Management and Designation	Video Processor to NT application target database management, identification, and designation for active/non-active tracking.

TRACKER (DSP) TASKS	**3 man months**
Rehost system tracker software.	This task amounts to deploying the Ariel hardware and tracker software on a new development platform and verifiying that the combination works as expected.
Target Communication, Management and Designation	• Remove communication code with existing weapons FCS. • Add host system inter-processor communication protocol.
Tracker generalization	Although well written and flexible, there are several aspects of the existing tracker software that are specific to its previous application. The purpose of this task is to generalize the tracker functionality were necessary to support the current application.
Tracker run-time adjustment of filter parameters	• Detection threshold • Track confirmation thresholds • Gate sizes • Kalman filter parameters (Q, Rc, etc.) • Latency prediction time
Tracker parameter access	Real-time communication with NT application of parameter updates and target statistics.
Track data rework	• Generalize track data. • Rework symbology. • Add inter-processor database management
Control loop	• Develop active target tracking control loop between camera and Video Processor. • Command and query camera position. • Lag tolerance. • Target ID. • Dynamic Status: Tracking, Active, Out-of-range.

Near Field Tracking	The existing tracking algorithm was designed for long-range targets (i.e. objects that occupy only a handful of pixels). When the object fills a large portion of the FOV, our ability to track the object is diminished. This task will address this by: • Adjusting current tracking parameters - This is the desired approach since it means no new software development. There is some reason to believe that this may be fruitful since we had success doing this in the weapon project for this type of target. • [For Phase II] Develop an alternate path through the processing stream to handle "large" objects. Before doing this however, investigations will be done in a non-real-time environment (Matlab). Several man-months will be required to complete this if an extensive new technique has to be coded in real-time.
Zoom and frame (as time allows)	The current tracking algorithm maintains gross estimates of the sizes of the objects it detects & tracks. Hence, suitable information is available for determining how to frame and zoom in on an object. The main task here is to write the code that accesses this information and commands the camera. The success of the near field tracking phase will determine the extent that zoom can be used.
SYSTEM INTEGRATION AND TEST TASKS	**3 man months**
Object Tracking Integration	Automated target selection and tracking integration and refinement.
Object Selection Integration	Manual target selection and automated tracking integration and refinement.
Test Set Variance	Define run-time parameters for tracking scenarios and dome camera variations where applicable.
Demo	With everything in place, we will need to test and classify just what we are capable of (tracking limitations, camera limitations, ...). Then we will be able to construct a sharp demo

CONTRACT ENGINEERING AGREEMENT
between
Spin Logic
and
Sensormatic Video Products Division

August 7, 1998

Spin Logic and Sensormatic Video Products Division (VPD) have agreed to enter into a business arrangement to jointly develop a technology demonstration which will prove the feasibility of a closed-loop automomous tracker/controller for the Sensormatic Dome camera line of products. It is intended that this business arrangement will eventually lead to a joint new product development effort for an autonomous tracker/controller, however, this initial business agreement shall only cover the Phase 1 efforts towards the technology demonstration. Phase 2, contingent upon the successful completion of Phase 1, shall be a product feasibiltiy demonstration covered by a separate Contract Engineering Agreement agreement document.

For the Phase 1 business agreement, Spin Logic shall function as a contract engineering firm to Sensormatic VPD. Both companies have a Non-Disclosure Agreement in place to cover confidential information and to prevent the divulgence of this information to other parties. There shall be no Intellectual Property (IP) exchanged between Spin Logic and Sensormatic VPD as part of the Phase 1 business agreement. Information required to field to technology demonstration (e.g., dome connector pinouts, dome serial protocol and command set information, etc.) shall be held in confidence by both parties per the executed NDA.

The technology demonstration for Phase 1 is described in a separate Statement of Work (SOW) written by Sensormatic VPD on August 7, 1998. This SOW descibes the scope of the work to be performed, applicable documents, specific task descriptions for Phase 1, and deliverables. Payments to Spin Logic for Phase 1 shall be as follows:

- First Payment: $25k at official start of Phase 1
- Second Payment: $25k at the successful completion Phase 1 Preliminary Design Review (PDR) requirements. The planned date for the PDR is Thursday, September 3rd, 1998.
- Third Payment: $30k at the successful completion of the Phase 1 demo and approval by Sensormativ VPD Engineering. The planned date for the successful completion of the Phase 1 demo is November 2nd, 1998.

Sensormatic VPD has the right to discontinue the project at any time.

Ray Broemmelsiek
Spin Logic

Al Cavegnero
Sensormatic VPD

Steve McLaughlin
Sensormatic VPD

John Volanski
Sensormatic VPD

SLargreel JV

STATEMENT OF WORK

FOR THE

PHASE 1

AUTONOMOUS TRACKER/CONTROLLER

PROJECT

Approved by:

8-7-98

John Volanski
Sensormatic Engineering Manager

Dave MacCormack
Sr. Consulting Engineer

DATE: August 7, 1998

1.0 SCOPE. This Statement Of Work (SOW) establishes the subcontractor's responsibility for performance of the tasks related to the technical design and development, integration, demonstration, and documentation of the Autonomous Tracker/Controller System.

2.0 APPLICABLE DOCUMENTS. The following documents of issue shown form a part of this SOW to the extent specified herein.

- Sensormatic SpeedDome 2000 Chassis Test Spec, page 11, Q8000-0773-01, dated 10/6/94.
- Sensormatic SpeedDome and SpeedDome NP Installation Guide, pages 1 & 2, V8000-0817 Rev 0.
- Equipment Loan Memo, dated 5/18/98.

3.0 TECHNICAL DESCRIPTION. The subcontractor shall help design develop, integrate, test, document and demonstrate a technology demonstration based on the integration of proprietary Spin Logic Technology with the Sensormatic SpeedDome. Specifically, the subcontractor shall help establish the technology concept design, help establish a detailed system design, and write specific code modules that will either execute within a target PC initially, and then as embedded system code, to drive a Sensormatic SpeedDome for the purpose of automatically discriminating a target and successfully tracking that target in clutter by manipulating the SpeedDome control signals to keep the target within view. The work performed on this project shall take place in two separate phases. Phase 1, which is detailed in this document, is a technology feasibility demonstration. Phase 2, which is detailed in a separate document, is a product feasibility demonstration which builds upon the technology demonstration in Phase 1.

4.0 TASK DESCRIPTION. The following subsections describe specific subcontractor task responsibilities and also identify items for which the customer is responsible.

4.1 ENGINEERING SUPPORT. The subcontractor shall function as a team member of the Sensormatic Technology Department. The point of technical liaison for the subcontractor is Dave MacCormack. The point of project management liaison for the subcontractor is John Volanski. Dave MacCormack shall function as Technical Oversight for the project, and can stand in as technical or project management liaison as required. It shall be the responsibility of Sensormatic to make sure that the subcontractor has the latest copies of the documents listed above in Section 2.0. The period of performance for the subcontractor for Phase 1 shall be from approximately August 10, 1998 through November 2, 1998.

4.2 REQUIREMENTS DEFINITION FOR THE TECHNOLOGY DEMONSTRATION. The requirements for the technology demonstration are as follows:

- Phase 1 shall use a PC with an embedded Spin Logic PCA to function as the heart of the tracker/controller. The PC/Spin Logic PCA will highlight objects it detects, based upon a sensitivity of detection setting. A touchscreen shall allow the user to select a highlighted object on the screen for automatic tracking by the system. (Alternately, a mouse could be used for this purpose.) An RS-422 control channel from the PC will send commands to manipulate the SpeedDome camera orientation so that it tracks the locked-on object. Video from the SpeedDome will go back to the Spin

Logic PCA for display on the system display. It is intended that this Phase 1 system be capable of tracking 4 independent objects in background clutter.

- *This paragraph describing Phase 2 is for reference only.* The goal of Phase 2 is to demonstrate discrimination and tracking over a distance. In addition, the Spin Logic PCA shall be co-located with a remote UltraDome instead of in the local PC/Workstation. It is intended that this Phase 2 system be capable of tracking 8 independent objects in background clutter. Color discrimination is not mandatory for Phase 2. In order to move toward productizing this technology demonstration, it would be advantageous to design the system such that:
  - There are no markers/overlays on the video. The user selects an object to track via the touchscreen, and the system automatically tracks that object (or informs the user that it can not lock on to that particular object).
  - The video output circuitry in the embedded Spin Logic PCA is removed to lower the system cost.
  - The system is designed with autonomy and low cost as the driving attributes.
  - The Spin Logic PCA must be able to pass through normal dome commands from other security devices without altering them. It must also be able to recognize commands generated by the user from his touchscreen designator. Non-conflicting/compatible protocols must be developed to avoid system integration problems.

TECHNOLOGY DEMONSTRATION DEVELOPMENT. The subcontractor shall be responsible for the detailed design and development of the executable PC code and for the remotely located integrated PCA embedded code. The subcontractor shall also be responsible for providing all of the required hardware elements of the technology demo, except for the SpeedDome, UltraDome and dome power adapters.

4.3 TEST AND INTEGRATION. All software and hardware tools, test equipment, and laboratory space shall be provided by the subcontractor for this purpose.

5.0 DELIVERABLES. The subcontractor shall demonstrate both the Phase 1 system as specified in Section 4.2 of this document. The demonstration hardware and software/firmware shall be retained by Sensormatic. It is anticipated that, based upon a successful demo, the technology concepts demonstrated shall eventually be developed into a viable product that shall benefit both members of the Sensormatic/Spin Logic Team. A Phase 1 Preliminary Design Review (PDR) shall be held to review progress to date and to review the current state of the technology demonstration system. The planned date for the PDR is Thursday, September 3rd, 1998. The final demonstration of the Phase 1 Tracker/Controller System shall take place on or before November 2nd, 1998.

6.0 REMUNERATION. The subcontractor shall receive remuneration for services rendered. This remuneration shall be delivered to the subcontractor as stipulated in the Phase 1 Contract Engineering Agreement between Spin Logic and Sensormatic VPD.

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CONTRACT ENGINEERING AGREEMENT
between
Spin Logic
and
Sensormatic Video Products Division

December 3, 1998

Spin Logic and Sensormatic Video Products Division (VPD) have agreed to enter into a business arrangement to jointly develop a technology demonstration which will prove the feasibility of a closed-loop automomous tracker/controller for the Sensormatic Dome camera line of products. It is intended that this business arrangement will eventually lead to a joint new product development effort for an autonomous tracker/controller. An initial business agreement resulted in a Phase 1 technology demonstration. Phase 2, the subject of this Contract Engineering Agreement, shall be a product feasibiltiy demonstration that extends the concepts and technology developed in Phase 1.

For the Phase 2 business agreement, Spin Logic shall function as a contract engineering firm to Sensormatic VPD. Both companies have a Non-Disclosure Agreement in place to cover confidential information and to prevent the divulgence of this information to other parties. There shall be no Intellectual Property (IP) exchanged between Spin Logic and Sensormatic VPD as part of the Phase 2 business agreement. Information required to field the technology demonstration (e.g., dome connector pinouts, dome serial protocol and command set information, etc.) shall be held in confidence by both parties per the executed NDA.

The technology demonstration for Phase 2 is described in a separate Statement of Work (SOW) written by Sensormatic VPD on December 3, 1998. This SOW descibes the scope of the work to be performed, applicable documents, specific task descriptions for Phase 2, and deliverables. Payments to Spin Logic for Phase 2 shall be as follows:

- First Payment: $25k at official start of Phase 2.
- Second Payment: $25k at the successful completion Phase 2 Preliminary Design Review (PDR) requirements. The planned date for the PDR is February 5, 1999.
- Third Payment: $30k at the successful completion of the Phase 2 demo and approval by Sensormatic VPD Engineering. The planned date for the successful completion of the Phase 2 demo is March 26, 1999.

Sensormatic VPD has the right to discontinue the project at any time.

Ray Broemmelsiek
Spin Logic

Al Cavegnero
Sensormatic VPD

Steve McLaughlin
Sensormatic VPD

John Volanski
Sensormatic VPD

SLargree2 JV

STATEMENT OF WORK

FOR THE

PHASE 2

AUTONOMOUS TRACKER/CONTROLLER

PROJECT

Approved by:

John Volanski
Sensormatic Engineering Manager

Dave MacCormack
Fellow of the Sensormatic Corporation

DATE: December 3, 1998

1.0 SCOPE. This Statement Of Work (SOW) establishes the subcontractor's responsibility for performance of the tasks related to the technical design and development, integration, demonstration, and documentation of the Autonomous Tracker/Controller System.

2.0 APPLICABLE DOCUMENTS. The following documents of issue shown form a part of this SOW to the extent specified herein.

- Sensormatic SpeedDome 2000 Chassis Test Spec, page 11, Q8000-0773-01, dated 10/6/94.
- Sensormatic SpeedDome and SpeedDome NP Installation Guide, pages 1 & 2, V8000-0817 Rev 0.
- Equipment Loan Memo, dated 5/18/98.
- Phase I SOW, Autonomous Tracker/Controller, dated August 7, 1998.
- Phase I PDR Document, Spin Logic, dated September 15, 1998.
- Phase I Contract Engineering Agreement between Spin Logic and Sensormatic VPD, dated August 7, 1998.
- Phase 2 Contract Engineering Agreement between Spin Logic and Sensormatic VPD, dated December 3, 1998

3.0 OVERALL TECHNICAL DESCRIPTION. The subcontractor shall help design develop, integrate, test, document and demonstrate a technology demonstration based on the integration of proprietary Spin Logic Technology with the Sensormatic UltraDome. Specifically, the subcontractor shall help establish the technology concept design, help establish a detailed system design, and write specific code modules that will either execute within a target PC initially, and then as embedded system code, to drive a Sensormatic UltraDome for the purpose of automatically discriminating a target and successfully tracking that target in clutter by manipulating the UltraDome control signals to keep the target within view. The work performed on this project shall take place in two separate phases. Phase 1, which is detailed in a separate document, is a technology feasibility demonstration. Phase 2, which is detailed in this document, is a product feasibility demonstration which builds upon the technology demonstration in Phase 1.

4.0 TASK DESCRIPTION. The following subsections describe specific subcontractor task responsibilities and also identify items for which the customer is responsible.

4.1 ENGINEERING SUPPORT. The subcontractor shall function as a team member of the Sensormatic Technology Department. The point of technical liaison for the subcontractor is Dave MacCormack. The point of project management liaison for the subcontractor is John Volanski. Dave MacCormack shall function as Technical Oversight for the project, and can stand in as technical or project management liaison as required. It shall be the responsibility of Sensormatic to make sure that the subcontractor has the latest copies of the documents listed above in Section 2.0. The period of performance for the subcontractor for Phase 2 shall be from approximately December 3, 1998 through March 26, 1999.

4.2 REQUIREMENTS DEFINITION FOR THE TECHNOLOGY DEMONSTRATION. The requirements for the technology demonstration are as follows:

- Phase 1 utilized a PC with an embedded Spin Logic PCA to function as the heart of the tracker/controller. The PC/Spin Logic PCA highlighted objects it detected, based upon a sensitivity of detection setting. A touchscreen

allowed the user to select a highlighted object on the screen for automatic tracking by the system. An RS-422 control channel from the PC sent commands to manipulate the UltraDome camera orientation so that it tracked the locked-on object. Video from the UltraDome went back to the Spin Logic PCA for display on the system display. The Phase 1 system was capable of tracking 4 independent objects in background clutter.

- The goal of Phase 2 is to demonstrate discrimination and tracking in the far field. In addition, the Spin Logic PCA shall be co-located with a remote UltraDome instead of in the local PC/Workstation. It is intended that this Phase 2 system be capable of tracking 8 independent objects in background clutter. Color discrimination is not mandatory for Phase 2. In order to move toward productizing the technology in this demonstration, it would be advantageous to design the system such that:
  - The markers/overlays on the video shall be selectable (on/off) by the user. The user selects an object to track via the touchscreen, and the system automatically tracks that object (or informs the user that it can't lock onto that particular object).
  - The video output circuitry in the embedded Spin Logic PCA is removed to lower the system cost.
  - Phase 2 shall add the capability to glue or unglue a target, so that it is locked-on for tracking regardless of other viable targets. This function shall be user selectable.
  - Phase 2 shall add the capability for polygon exclusion. The reason for this is that a slowly swaying tree may be treated as a viable target by the system, and the user may want to exclude that specific polygonal area from consideration for acquiring new target tracks.
  - Phase 2 shall also add the capability for zoom sampling of tracked objects. This function shall be user selectable. The duration of the zoom sampling shall be 3 seconds.
  - The system shall be designed with autonomy and low cost as the driving attributes.
  - The Spin Logic PCA must be able to pass through normal dome commands from other security devices without altering them. It must also be able to recognize commands generated by the user's PC from his touchscreen designator. Non-conflicting/compatible protocols must be developed to avoid system integration problems.

TECHNOLOGY DEMONSTRATION DEVELOPMENT. The subcontractor shall be responsible for the detailed design and development of the embedded executable code in the remotely located integrated PCA. The subcontractor shall also be responsible for providing all of the required hardware elements of the technology demo, except for the SpeedDome, UltraDome and dome power adapters.

4.3 TEST AND INTEGRATION. The subcontractor shall provide all software and hardware tools, test equipment, and laboratory space for this purpose.

5.0 DELIVERABLES. The subcontractor shall demonstrate both the Phase 2 system as specified in Section 4.2 of this document. Sensormatic shall retain the demonstration hardware and software/firmware. It is anticipated that, based upon a successful demo, the

technology concepts demonstrated shall eventually be developed into a viable product that shall benefit both members of the Sensormatic/Spin Logic Team. A Phase 2 Preliminary Design Review (PDR) shall be held to review progress to date and to review the current state of the technology demonstration system. The planned date for the PDR is February 5, 1999. The final demonstration of the Phase 2 Tracker/Controller System shall take place on or before March 26, 1999.

6.0 REMUNERATION. The subcontractor shall receive remuneration for services rendered. This remuneration shall be delivered to the subcontractor as stipulated in the Phase 2 Contract Engineering Agreement between Spin Logic and Sensormatic VPD.

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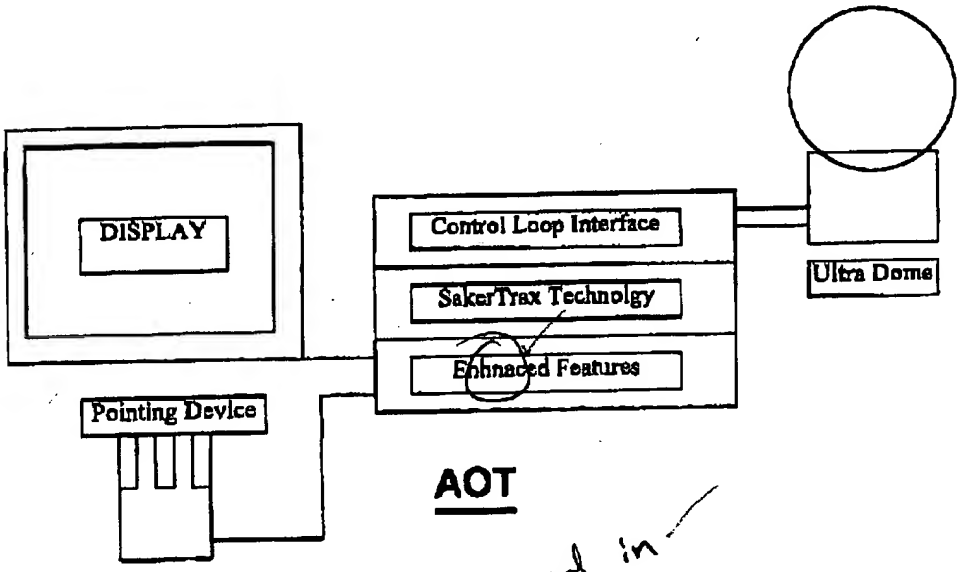
Technology License Agreement

Version 2.3 8/20/99

This Technology License Agreement (this "Agreement") is made as of the _____ day of _____, 1999 (the "Effective Date"), by and between SENSORMATIC ELECTRONICS CORPORATION., a Delaware corporation ("SEC"), with an office at 6795 Flanders Drive, San Diego, CA 92121, and SAKERTRAX INC., a California corporation ("SakerTrax"), with an office at 9465 Maler Road, San Diego, CA 92129.

RECITALS

A. SakerTrax possesses, and is developing new, technical knowledge and information relating to the design, engineering, performance, specifications and manufacture of a closed-loop autonomous tracker/controller known as the "Autonomous Object Tracker" (AOT).



contained in

B. SakerTrax owns all of the right, title and interest in and to all intellectual property, including, but not limited to copyrights, trademarks, trade secrets and patentable inventions (the "SakerTrax Technology") in the Autonomous Object Tracker. The SakerTrax Technology functionally encompasses receiving a signal from a video camera, finding one or more moving objects within the camera's field of view, tracking these objects, and predicting the trajectories of these objects.

C. In addition to the SakerTrax Technology, SakerTrax has developed Enhanced Features. The Enhanced Features have : (i) the ability to receive user input from a mouse or trackball to select an object to follow, (ii) the ability to improve the discrimination of an object to be tracked by having the user draw a box around the image of the object using an input pointing device (iii) the ability to watch for moving targets within a defined region in the field of view of the camera (iv) a user interface for positioning the dome and selecting targets to track by providing a cursor glyph that moves according to pointing device input within the field of view image that may be used to select a target or by positioning the cursor at one of four sides of the image causing the dome camera to pan or tilt according to user's expectation for affecting the field of view. When combined with a control loop interface (the "Control Loop Interface") previously developed by the parties and owned by SEC, and the SakerTrax Technology, the Enhanced Features have : (i) the ability to follow a single, selected target when connected to a servo-controlled camera, (ii) the ability to control optical zoom on a camera to increase detail of an object while it is being tracked (iii) the ability to exclude certain tracking targets within a defined region that may not be within the field of view but are within the dome camera's coverage ~~(iv) a user interface for positioning the dome and selecting targets to track by providing a cursor glyph that moves according to pointing device input within the field of view image that may be used to select a target or by positioning the cursor at one of four sides of the image causing the dome camera to pan or tilt according to user's expectation for affecting the field of view~~, and (v) other features encompassed in Version 1.0 Product (as such term defined in Section 1.A.iv below) developed by SakerTrax.

D. SakerTrax and SEC entered into a Contract Engineering Agreement, dated August 7, 1998 (the "Phase 1 Contract") and a Statement of Work for the Phase 1 Autonomous Tracker/Controller Project, dated August 7, 1998 (the "Phase 1 SOW"), pursuant to which SEC contracted with SakerTrax generally to help design, develop, integrate, test, document and demonstrate a technology demonstration based on the integration of the SakerTrax Technology with the SEC SpeedDome camera line of products and specifically to provide the technology feasibility demonstration ("Phase 1") of an autonomous object tracker (an "AOT").

E. SakerTrax and SEC entered into a Contract Engineering Agreement, dated December 3, 1998 (the "Phase 2 Contract") and a Statement of Work for the Phase 2 Autonomous Tracker/Controller Project, dated December 3, 1998 (the "Phase 2 SOW"), pursuant to which SEC contracted with SakerTrax generally to help design, develop, integrate, test, document and demonstrate a technology demonstration based on the integration of the SakerTrax Technology with the SEC SpeedDome camera line of products and specifically to provide the product feasibility demonstration of the AOT which would build upon the technology demonstration in Phase 1.

F. The purpose of the development effort outlined in the Phase 1 Contract, the Phase 1 SOW, the Phase 2 Contract, and the Phase 2 SOW was to demonstrate the technical

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